

gene	1. .408
	/gene="ssga"
CDS	1. .>408

BASE COUNT	68 a	145 c	153 g	72 t
ORIGIN	/ translation = "MRSVQAEVMMVMSFLVLSSELSFKLPEVLKRYEAGDPAALRMFFHLE GDAVNTWAFGRELLDDGINSPSGDGDYHIGTPEEGEGADVHILQVAGDRALFAGTAGA" PLVAFLRTRDPLVPGQEHFLGDEFDGNEEDALGR"			

Query Match	100.0%;	Score 438;	DB 6;	Length 438;
Best Local Similarity	100.0%;	Pred. No. 2.3e-47;		
Matches 438; Conservative	0;	Mismatches	0;	Indels 0; Gaps 0

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QY	61	ttccgattatccgtgtgagcttcgcatacagagtcggagatccgtaatgtccatccgatacag	120
Db	61	TTCCGATATTCCGGGTGGAGCTCCGATAGAGAGTCCGGCATCCGATATGCATCCGGATACG	120
QY	121	ttcaacattccccgagcagatgcgcccctgtacactggagccgtttggcccgcgagctgcgtgtgac	180
Db	121	TTCCACCTTCCCGCGGCGATGCCCTGTGACTCTGGCGTTCGGCCGCGAGCTGCTGTGGAC	180
QY	181	gggtctcaacaaagcccgagccgagcgagcgtatgtgacatacgcgcccagaccgagcccgaaagc	240
Db	181	GGGCTCAACACACCCGAGGCGGAGCGGAGATGCACATGGCCCCGACGAGCCCGAAGGC	240
QY	241	ctcgagagatgtccacatactcgcgctccaaagtctggcgcgagacgctgcgtgtcttcggcgggg	300
Db	241	CTCGGAGATGTCCACATCTCCGGCTCCAGAGTCGCCGAGACGTGTGCTTCCCGGCGGGG	300
QY	301	acgagcagcgtgtgtgagcgtctctcgaccggagcggaaacgctcgtgcgcgcctccgagcgaag	360
Db	301	ACGGACCCGCTGGTGGCTTCTCTGCACCGAGCAGACAAGCTCGTGGCGCTTGCGCAAGAG	360
QY	361	cacacgctgtggttgacttcgaacgccaacttggaaagacgactgtggccgcatcctctgcggag	420
Db	361	CACAGCTGTGGGTGACTTCGACGGCAACTGTGAGGACGCACTGGGCGGCATCTCGCCGAG	420
QY	421	gagcagaagccgcggtctga	438
Db	421	GAGCAGAACGCCGGCTGA	438

RESULT	2				
LOCUS	D50051	1513 bp	DNA	linear	BCT 19-MAY-1995
DEFINITION	Streptomyces griseus DNA for ssgA, complete cds.				
ACCESSION	D50051				
VERSION	D50051.1	GI:1772323			
KEYWORDS	ssgA.				
SOURCE	Streptomyces griseus (strain:B2682) DNA.				
ORGANISM	Streptomyces griseus				
	Bacteria; Firmicutes; Actinobacteria; Actinobacteridae;				
	Actinomycetales; Streptomyicinae; Streptomycetaceae; Streptomyces.				
REFERENCE	1 (sites)				
AUTHORS	Kawamoto, S. and Ensign, J.C.				
TITLE	Cloning and characterisation of a gene involved in regulation of sporulation and cell division of Streptomyces griseus				
JOURNAL	Actinomycetol. 9, 136-151 (1995)				
REFERENCE	2 (sites)				
AUTHORS	Kawamoto, S. and Ensign, J.C.				
TITLE	Isolation of mutants of Streptomyces griseus that sporulate in				

JOURNAL	nutrient rich media
REFERENCE	Actinomycetol. 9, 124-135 (1995)
	3 (sites)

AUTHORS Kawamoto, S., Watanabe, H., Hasekura, A., Ensign, J. C. and Ochi, K.
TITLE Expression analysis of the ssiga gene product, associated with sporulation and cell division in *Streptomyces griseus*
JOURNAL Microbiology (Reading, England) 143 (Pt 4), 1077-1086 (1997)
MEDLINE 97286526

REFERENCE	AUTHORS	TITLE	JOURNAL	REFERENCE
4 (bases 1 to 1513)	Shinichi, K., and Ensling, J.	Cloning and characterization of a gene involved in sporulation and cell division of <i>Streptomyces griseus</i>	Unpublished (1995)	5 (bases 1 to 1513)

JOURNAL
DIRECT SUBMISSION
Submitted[†] (06-APR-1995) Kawamoto Shinichi, National Food Research
Institute, Biomolecular Transfunction Laboratory; Kamondai 2-1-2
Tsukuba, Ibaraki 305, Japan (Tel.:0298-38-8124, Fax:0298-38-7996)
[†]Received April 1995

FEATURES	Location/Qualifiers
source	1..1513
	/organism="Streptomyces griseus
	/strain="B2682"
	/db_xref="taxon:1911"
RBS	385..389
CDS	392..802

[illegible][illegible]

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OM protein - protein search, using sw model

Run on: July 18, 2002, 14:15:11 ; Search time 140.15 Seconds
(without alignments)
166.638 Million cell updates/sec

Title: US-09-749-185-3

Perfect score: 704
Sequence: 1 MSFVSEELSPRIPELRYE.....FDGNLEDAIGRIAEQNG 135

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 562222 seqs, 172994929 residues

Total number of hits satisfying chosen parameters: 562222

Minimum DB seq length: 0

Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database :

- 1: SPREMBL_19:**
- 2: sp_archaea:**
- 3: sp_bacteria:**
- 4: sp_fungi:**
- 5: sp_human:**
- 6: sp_invertebrate:**
- 7: sp_mammal:**
- 8: sp_mmc:**
- 9: sp_organelle:**
- 10: sp_phage:**
- 11: sp_plant:**
- 12: sp_rodent:**
- 13: sp_virus:**
- 14: sp_vertebrate:**
- 15: sp_unclassified:**
- 16: sp_virus:**
- 17: sp_bacteriophage:**
- 18: sp_archaeal:**

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	704	100.0	136	2	P95753 streptomyc
2	606	86.1	145	2	O9F985 streptomyc
3	556	79.0	135	2	O9F987 streptomyc
4	546	77.6	136	2	O9X902 streptomyc
5	464	65.9	135	2	O9F986 streptomyc
6	249	35.4	159	2	O9L268 streptomyc
7	219	31.1	142	2	O9S2F7 streptomyc
8	190	27.0	138	2	O9X7M8 streptomyc
9	150	21.3	156	2	O9F907 streptomyc
10	140	19.9	142	2	O9X7R1 streptomyc
11	99.5	14.1	126	2	O9RKC9 streptomyc
12	84.5	12.0	548	17	O9HS11 halobacteri
13	84	11.9	261	5	O9XVD2 caenorhabdi
14	83.5	11.9	456	10	O9SR03 arabidopsis
15	81	11.3	402	2	O9JUF9 streptomyc
16	81	11.5	436	4	O9BYG6 homo sapien

17	81	11.5	549	13	O9W639 xenopus lae
18	79	11.2	554	13	O9I9P4 brachydanio
19	79	11.2	543	13	O9OY99 cyprinus ca
20	79	11.2	547	13	O9OYAL cyprinus ca
21	78	11.1	547	13	O9OYAO cyprinus ca
22	78	11.1	700	2	O34003 rhodobacter
23	77.5	11.0	913	2	O54182 streptomyc
24	77	10.9	544	13	O9OY98 cyprinus ca
25	77	10.9	819	10	O9SNA4 arabidopsis
26	76.5	10.9	819	10	O9ERN8 mus musculu
27	76	10.8	260	11	O9ERL29 streptomyc
28	75.5	10.7	902	16	O9I742 pseudomonas
29	75	10.7	381	2	O9KXV7 streptomyc
30	75	10.7	644	2	O9RJK2 streptomyc
31	75	10.7	760	16	O9I6K5 pseudomonas
32	75	10.7	1960	5	O9NDY5 leishmania
33	74	10.5	924	10	O9W9L8 arabidopsis
34	74	10.5	981	11	O9JLC9 mus musculu
35	74	10.5	1235	4	O9S428 homo sapien
36	73.5	10.4	346	16	O34788 bacillus su
37	73.5	10.4	418	11	O9ER10 delinococcus
38	73.5	10.4	538	16	O9R041 turkey herp
39	73.5	10.4	1191	12	O9E6P0 rhizobium m
40	73	10.4	374	16	O9Z7Y5 arabidopsis
41	73	10.4	589	10	O9C621 streptomyc
42	73	10.4	674	5	O9VLJ1 dirosophila
43	73	10.4	2034	2	O93NX7 streptomyc
44	72.5	10.3	512	17	O26636 methanother
45	72.5	10.3	1096	10	O04954 arabidopsis

ALIGNMENTS

RESULT 1	
ID P95753	PRELIMINARY; PRT; 136 AA.
AC P95753	
DT 01-MAY-1997 (TREMblrel. 03, Created)	
DT 01-MAY-1997 (TREMblrel. 03, Last sequence update)	
DT 01-DEC-2001 (TREMblrel. 19, Last annotation update)	
DE SSGA.	
OS Streptomyces griseus.	
OC Bacteria; Firmicutes; Actinobacteria; Actinobacteridae;	
OC Actinomycetales; Streptomycineae; Streptomycetaceae; Streptomyces.	
OX NCBI_TaxID=1911;	
RN [1]	SEQUENCE FROM N.A.
RP STRAIN-B2682;	
RC Shuichi K., Ensign J.;	
RA "Cloning and characterization of a gene involved in sporulation and	
RT cell division of Streptomyces griseus."	
RL Submitted (APR-1995) to the EMBL/GenBank/DBJ databases.	
RN [2]	SEQUENCE FROM N.A.
RP STRAIN-B2682;	
RC Kawamoto S., Ensign J.C.;	
RA "Isolation of mutants of Streptomyces griseus that sporulate in	
RT nutrient rich media."	
RN Nippon Hosenkin Gakkaishi 9:124-135(1995).	
RP [3]	SEQUENCE FROM N.A.
RC STRAIN-B2682;	
RA Kawamoto S., Ensign J.C.;	
RT "Cloning and characterization of a gene involved in regulation of	
RT sporulation and cell division of Streptomyces griseus."	
RN Nippon Hosenkin Gakkaishi 9:136-151(1995).	
RP [4]	SEQUENCE FROM N.A.
RC STRAIN-B2682;	
RA MEDLINE-97286526; PubMed-9141673;	
RT Kawamoto S., Watanabe H., Heskeith A., Ensign J.C., Ochi K.;	
RT "Expression analysis of a ssga gene product associated with	

RT sporulation and cell division in *Streptomyces griseus*.";
 RL Microbiology 143:1077-1086(1997).
 DR EMBL; D50051; BAA2158.1; -
 SQ SEQUENCE 136 AA; 14783 MW; 66A28A7823AD7C8B CRC64;

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 DB 2 MSFLVSEELSPRIPELVREVGDPYAIRMTFHLPGDAPYTMAGRELLDGLNSPSGDD 61
 OY 61 VHGTPTEGLDVIHRLQVGADRALFRAGTAPLVAFDRTDKLIVPLGQHTLGDFDGNL 120
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 DB 62 VHGTPTEGLDVIHRLQVGADRALFRAGTAPLVAFDRTDKLIVPLGQHTLGDFDGNL 121
 OY 121 EDALGRILAEQONAG 135
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 DB 122 EDALGRILAEQONAG 136

RESULT 2
 ID Q9F9B5 PRELIMINARY; PRT; 145 AA.
 AC Q9F9B5;
 DT 01-MAR-2001 (TREMBLrel. 16, Created)
 DT 01-MAR-2001 (TREMBLrel. 16, Last sequence update)
 DT 01-OCT-2001 (TREMBLrel. 18, Last annotation update)
 DE SSGA.
 GN SSGA.
 OS Streptoverficillium netropsis (Streptoverficillium flavopersicus).
 OC Bacteria; Firmicutes; Actinobacteria; Actinobacteridae;
 OC Actinomycetales; Streptomycinae; Streptomycetaceae; Streptomyces.
 OX NCBI_TaxID=53404;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA van Wezel G.P., Rousseau C., Kraal B.;
 RT "Cloning and sequencing of the Streptomyces netropsis ssgr gene.";
 RL Submitted (Oct-1999) to the EMBL/Genbank/DBJ databases.
 DR EMBL; AF195772; AAG28483.1; -
 SQ SEQUENCE 145 AA; 15838 MW; 92AC0F30DF3D2620 CRC64;

Query Match 86.1%; Score 606; DB 2; Length 145;
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 DB 11 MSFLVSEELSPRIPELVREVGDPYAIRMTFHLPGDAPYTMAGRELLDGLNSPSGDD 70
 OY 61 VHGTPTEGLDVIHRLQVGADRALFRAGTAPLVAFDRTDKLIVPLGQHTLGDFDGNL 120
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 DB 71 VHGTPTEGLDVIHRLQVGADRALFRAGTAPLVAFDRTDKLIVPLGQHTLGDFDGNL 130
 OY 121 EDALGRILAEQONAG 135
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 DB 131 EDALGRILAEQONAG 145

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 ID Q9F9B7 PRELIMINARY; PRT; 135 AA.
 AC Q9F9B7;
 DT 01-MAR-2001 (TREMBLrel. 16, Created)
 DT 01-MAR-2001 (TREMBLrel. 16, Last sequence update)
 DT 01-MAR-2001 (TREMBLrel. 16, Last annotation update)
 DE SSGA.
 GN SSGA.
 OS Streptomyces goldenensis.
 OC Bacteria; Firmicutes; Actinobacteria; Actinobacteridae;

OC Actinomycetales; Streptomycinae; Streptomycetaceae; Streptomyces.
 OX NCBI_TaxID=121022;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA van Wezel G.P., Rousseau C., Kraal B.;
 RT "Cloning and sequencing of the Streptomyces goldenensis ssgr gene.";
 RL Submitted (Oct-1999) to the EMBL/Genbank/DBJ databases.
 DR EMBL; AF195770; AAG28481.1; -
 SQ SEQUENCE 135 AA; 14843 MW; 3200CC8BDE4ED6 CRC64;

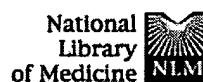
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 DB 1 MSFLVSEELSPRIPELVREVGDPYAIRMTFHLPGDAPYTMAGRELLDGLNSPSGDD 60
 OY 61 VHGTPTEGLDVIHRLQVGADRALFRAGTAPLVAFDRTDKLIVPLGQHTLGDFDGNL 120
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 DB 61 VHGTPTEGLDVIHRLQVGADRALFRAGTAPLVAFDRTDKLIVPLGQHTLGDFDGNL 120
 OY 121 EDALGRILAEQONAG 135
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 DB 121 EDALGRILAEQONAG 135

RESULT 4
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 AC Q9X9U2;
 DT 01-NOV-1999 (TREMBLrel. 12, Created)
 DT 01-NOV-1999 (TREMBLrel. 12, Last sequence update)
 DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
 DE PUTATIVE REGULATOR.
 GN SCQ11.09.
 OS Streptomyces coelicolor.
 OC Bacteria; Firmicutes; Actinobacteria; Actinobacteridae;
 OC Actinomycetales; Streptomycinae; Streptomycetaceae; Streptomyces.
 OX NCBI_TaxID=1902;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA Seeger K., Harris D.;
 RT Submitted (Jul-1999) to the EMBL/Genbank/DBJ databases.
 RN [2]
 RP SEQUENCE FROM N.A.
 RC STRAIN-A3(2);
 RA James K.D., Parkhill J., Barrell B.G., Raftery M.A.;
 RL Submitted (Jul-1999) to the EMBL/Genbank/DBJ databases.
 RN [3]
 RP SEQUENCE FROM N.A.
 RC STRAIN-A3(2);
 RX MEDLINE-97000351; PubMed-8843436;
 RA Kinsashi H., Hopwood D.A.;
 RT "A set of ordered cosmid and a detailed genetic and physical map for the 8 Mb Streptomyces coelicolor A3(2) chromosome.";
 RL Mol. Microbiol. 21:77-96(1996).
 DR EMBL; AL096823; CAB46964.1; -
 SQ SEQUENCE 136 AA; 14920 MW; 4B67C1F1E0BECC88 CRC64;

Query Match 77.6%; Score 546; DB 2; Length 136;
 Best Local Similarity 77.8%; Pred. No. 4e-46;
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 DB 2 MSFLVSEELSPRIPELVREVGDPYAIRMTFHLPGDAPYTMAGRELLDGLNSPSGDD 61
 OY 61 VHGTPTEGLDVIHRLQVGADRALFRAGTAPLVAFDRTDKLIVPLGQHTLGDFDGNL 120



PubMed	Nucleotide	Protein	Genome	Structure	PMC	Taxonomy	OMIM	Books	
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		<input checked="" type="checkbox"/> Limits	Preview/Index	History	Clipboard	Details			
Display		Abstract	▼	Show: 20	▼	Sort	▼	Send to	Text

☐ 1: Microbiology. 1997 Apr;143 (Pt 4):1077-86.

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Expression analysis of the ssgA gene product, associated with sporulation and cell division in *Streptomyces griseus*.

Kawamoto S, Watanabe H, Hesketh A, Ensign JC, Ochi K.

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National Food Research Institute, Ibaraki, Japan. taishi@ss.nfri.affrc.go.jp

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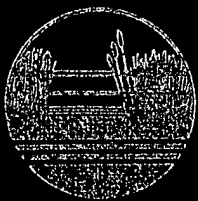
The ssgA gene of *Streptomyces griseus* B2682, when present in high copy number, results in both suppression of sporulation and fragmented growth of mycelia. Western analysis with polyclonal antibodies against the gene product (SsgA) revealed a close correlation between SsgA accumulation and the onset of sporulation in wild-type cells. The protein was only detected in the cytoplasm. Certain developmental mutants of *S. griseus* (afs, reIC and brgA) which are defective in aerial mycelium formation in solid culture and submerged spore formation in liquid culture failed to accumulate SsgA. The SsgA protein appeared shortly (1 h) after nutritional shift-down of strain B2682 cells. afs mutant cells sporulated and expressed SsgA only when A-factor was present both before and after nutritional shift-down. Introduction of the ssgA gene in a low-copy-number vector into strain B2682 resulted in fivefold overexpression of SsgA, and was accompanied by fragmented growth of mycelia and suppression of submerged spore formation (in liquid culture) and aerial mycelium formation (in solid culture). Streptomycin production was not inhibited. In a control experiment, a nonfunctional ssgA gene possessing a frameshift mutation near its N-terminus had no effect on either growth or sporulation. It is proposed that the ssgA gene product plays a role in promoting the developmental process of *S. griseus*.

PMID: 9141673 [PubMed - indexed for MEDLINE]

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